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Telephony

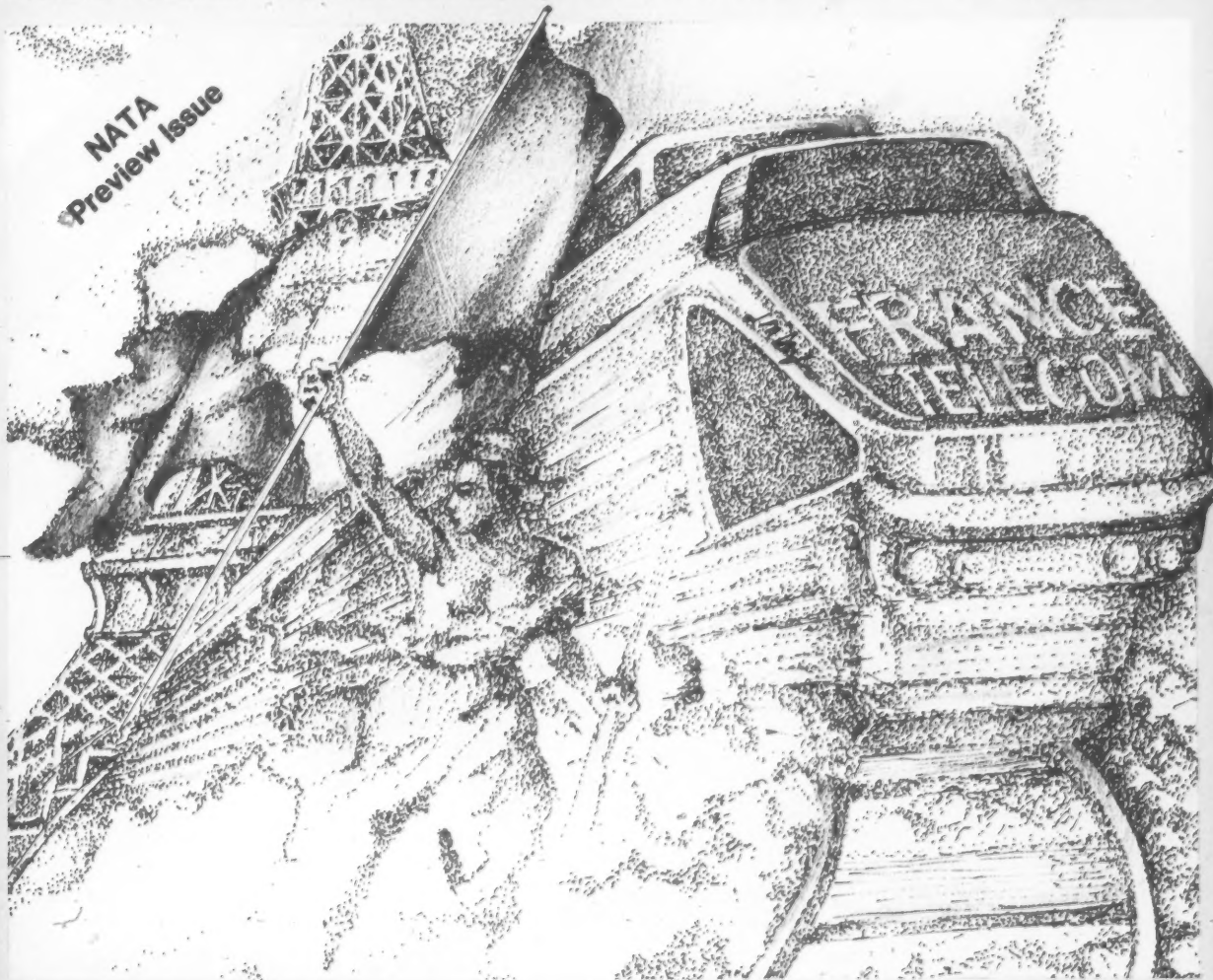
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INTEGRATING VOICE & DATA COMMUNICATIONS

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NATA
Preview Issue



**FRANCE TELECOM
MOVES AHEAD** Uncertain
regulatory territory cannot
stop this aggressive PTT

**PAC BELL PURSUES
VISION OF THE '90s**

Challenges vendors for help
in reaching Netsys concept

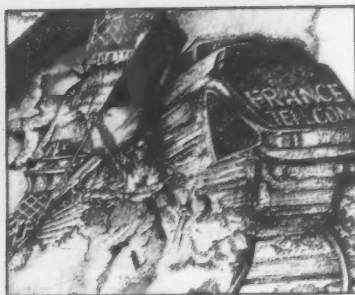
**GREENE APPROVES RHC
CALLING CARDS**

Orders sweeping changes in their use

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INTEGRATING VOICE & DATA COMMUNICATIONS



France's politics and governments may change, but its telecommunications policies follow a fast track to the 21st century.
Cover art by Laura Doyle

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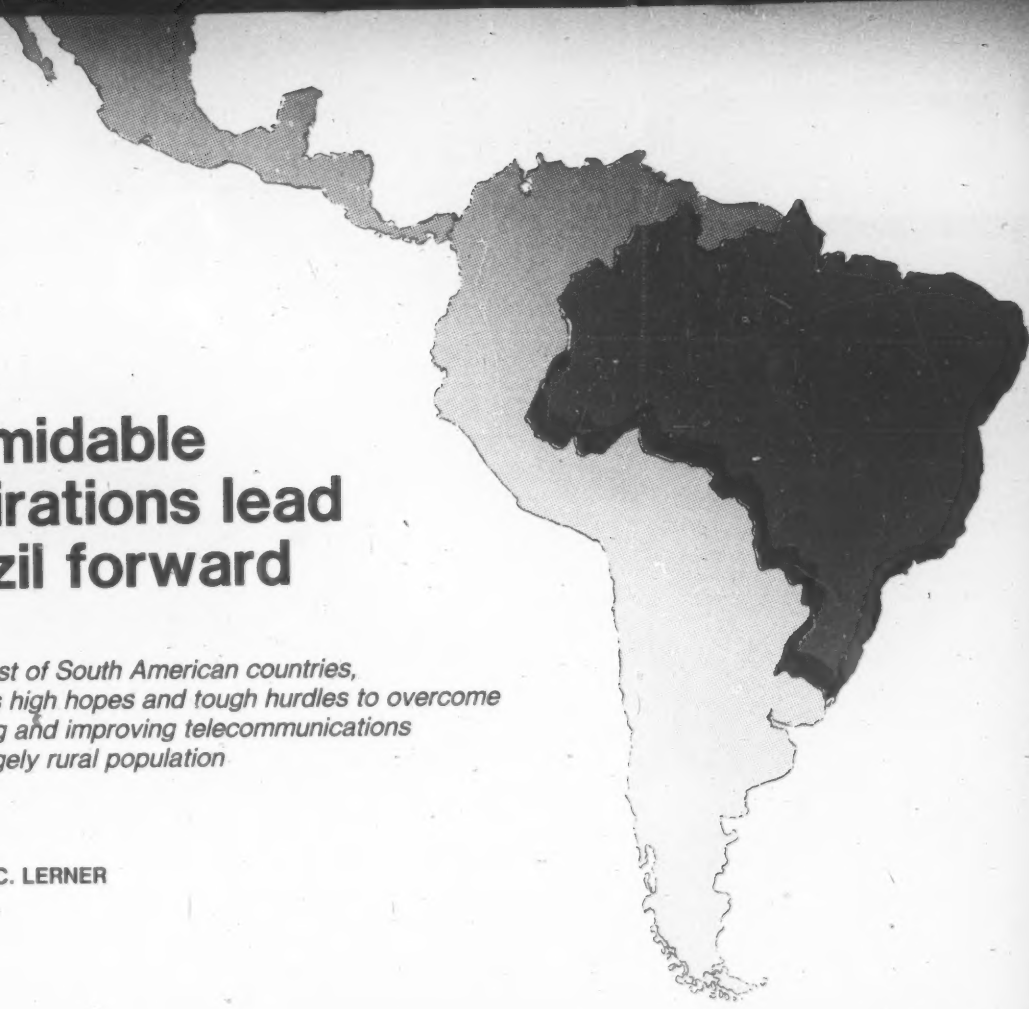
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By Deborah Pfeiffer. At NATA's Unicom 2 next month in Dallas, the interconnect association will begin planning for a new era. A product preview begins on page 46

58 FORMIDABLE ASPIRATIONS LEAD BRAZIL FORWARD

By Norman C. Lerner. Brazil has high hopes and tough hurdles to overcome to bring improved telecommunications to its largely rural population

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Formidable aspirations lead Brazil forward

The largest of South American countries, Brazil has high hopes and tough hurdles to overcome in bringing and improving telecommunications for its largely rural population.

NORMAN C. LERNER

Brazil, the largest country in South America, is about the same size as the United States. Its telecommunications community has the same aspirations for change and improvement as those in the U.S. But that is where the similarity ends.

Most of Brazil's population is concentrated along the coast. Except for a half-dozen or so large cities, an inordinately large proportion of the country is rural. Income and economic development drop rapidly outside the major Brazilian cities.

Nevertheless, Brazilian aspirations for a comprehensive telecommunications system cover the spectrum: from advanced and enhanced services in the major cities to basic telephony in rural areas.

Why is this mammoth country, the most economically, and perhaps the most industrialized of all developing countries in Latin

America, suffering the same telecommunications development maladies that afflict other developing countries? And can the hoped-for changes in Brazil's telecommunications infrastructure be achieved?

Irregular Growth

Telecom services in Brazil have improved steadily over the last 20 years. The typical deficiencies of a developing country have been gradually disappearing. By the early 1970s, a modestly acceptable level of service was reached.

In 1970, 2 million telephones served a population of 90 million. This increased last year to 13.5 million telephones serving 141 million people. Brazil now has one of the 15 largest telephone networks in the world; it ranks 36th in the world in telephone density, with 8.6 per 100 people, up from two per 100 in 1970. This apprecia-

ble improvement still leaves Brazil with less service for the population than some of its other Latin American neighbors, including Mexico, Venezuela, Colombia and Uruguay.

Still, remarkable improvements have occurred in a relatively short time. Brazil's growth rate has been higher than most of Latin America, pushed by a fluctuating but generally upward industrial growth.

Calling patterns reflect this growth. Domestic long-distance calls increased from 3 million in 1969 to more than 450 million in 1987; telex subscribers increased from 2000 to 93,000 in the last 15 years, and it is now possible to dial direct to any Brazilian city.

There has been comparable improvement in the international area due to satellite and submarine cable, which were non-existent

continued on page 60

Brazil *continued*

in 1967. It is now possible to dial direct to more than 50 different countries from Brazil; international traffic has increased over the same time period from virtually zero to 1.5 million calls.

Plans, Expectations

This glowing picture is one that hopefully will continue. Indeed, Brazil plans to have 25 million main lines installed by the year 2000, 17 million of which will be digital. (To date fewer than 1 mil-

Brazil is no exception. However, while it focuses on acquiring state-of-the-art facilities and services such as digital switching, cellular radio and satellite, Brazil must recognize internal and external anomalies that have caused its recent growth.

Economic Impact

The volume of telephone calling increased more than 30% during Brazil's economic recovery in 1985 and 1986. This, coupled with the

spikes have been a two-edged sword, leading to savage inflation.

Inflation has had two effects. The first has been to over-stimulate demand by effectively reducing the prices of telecommunications services in real terms, which has decreased the investment capital available for expansion. The second effect of inflation has been to reduce incentive for any external investment because a return on this investment is effectively reduced, if not eliminated.

The most recent data indicate that prices in Brazil rose almost 24% in July. This equals about 1200% per year. In addition, Brazil's foreign debt is about \$120 billion and requires about half of its annual export earnings to cover its interest payments. Moreover, the government's budget deficit is 5.5% of its total domestic output—and growing. Thus, the Brazilian currency is being devalued at about 1% per day.

Meanwhile, internally developed funds from telecommunications operations are unavailable, a direct result of inflation. First, the government has appropriated any operating surpluses from its telecommunications companies to finance deficits in other sectors of the economy. Second, the rampant inflation has reduced the real price of services. This has artificially stimulated demand, causing saturation of the domestic system and the need for additional facilities. At the same time, cash flow for investment in the needed expansion has been reduced.

The effect of this inflation on prices can be seen in Figure 1. The effective price index (real value) of telecommunications prices decreased by 80% over the last 10 years and is still declining. Tariffs are now at the lowest level everywhere. For example, it costs about \$1 per month for basic residential service, including the equivalent of about 90 local calls. Although some ground was recovered during the short-lived expansion in 1986, the current inflation rate in Brazil has more than offset those gains.

As noted earlier, these low rates have stimulated demand. Consequently, in 1986 4 million people were willing to pay \$1000 to the

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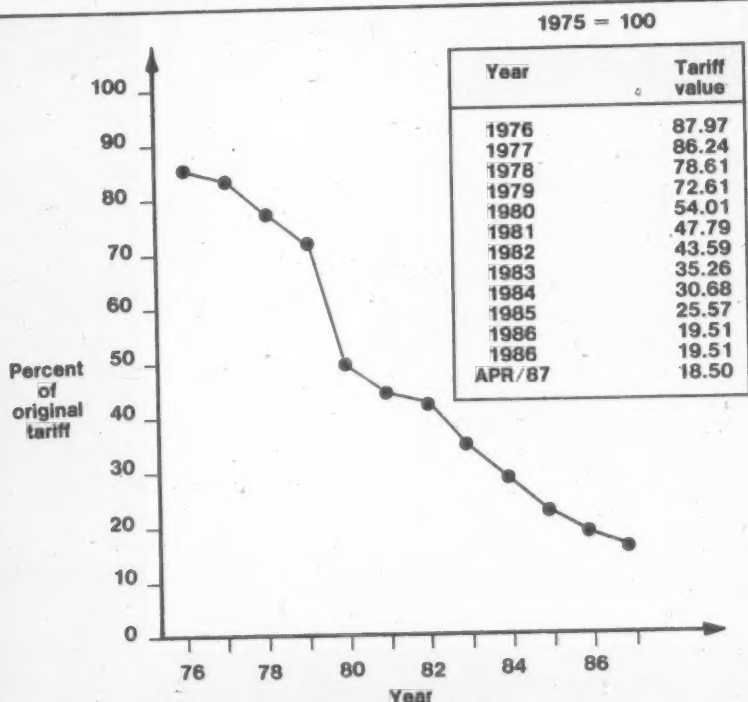


FIGURE 1 INDEX OF TARIFF LOSSES

lion digital lines are installed.) Additionally, Brazil is considering debit card public phones, a 200-terminal very small aperture terminal network, and AMPS-standard cellular telephone systems for the cities of Rio de Janeiro, Sao Paulo and Brasilia. To this end, President Sarney's government has increased real investments in the telecommunications sector in the past three years from \$800 million to a planned \$1.4 billion for 1988.

As is true for most developing countries, infrastructure achievements are sensitive to technical, economic and political factors.

existing facilities' undersupply condition, saturated the domestic system. There was a deficit of 6 million lines in January 1987, which increased to about 9 million this past January. Even in Rio de Janeiro, for example, it can take several minutes to get a dial tone. Estimates are that the number of lines will have to increase to more than 27 million to eliminate current overload—well more than the 25 million goal set for the year 2000.

As already noted, the increases in demand for services are due to the general industrial growth in Brazil. However, major growth

**FIGURE 2 RURAL POPULATION DISTRIBUTION
PERCENT OF TOTAL RURAL POPULATION
BY MAJOR REGIONS
(1980)**



Brazil *continued*

operating company for a line almost two years prior to any expected installation. In some instances, potential urban subscribers are known to have paid as much as \$7000, while rural lines were unavailable at any price. The lower, official price is formally known as a "self-financing contribution," but it is a compulsory subscription to share ownership in the telephone company.

Rural Telephony

As difficult as it has been to maintain telecom services in cities; it has been even more difficult in rural areas. About 46 million people, or 31% of the total popula-

tion of Brazil, is rural. The geographic distribution of the rural population is shown in Figure 2. These areas include 4200 cities and 4300 towns, 70% of which have fewer than 2500 people. Of this total, 1300 towns are not served at all. Current plans project service for these areas by 1990.

But if past rural objectives and achievements are a guide, these plans are not likely to be realized, especially in light of Brazil's current economic problems. In 1977, for example, the Ministry of Communications said that rural telephony would be one of its top priorities to support the government's

agricultural effort. At the time, it estimated a need for 150,000 lines in rural areas. But by 1985 only 20,000 had been installed.

To underscore this active deficiency, a conference was held at the Pousada do Rio Quente in the state of Goia in Brazil. The conference was sponsored by the leading telecommunications publisher in Latin America, Revista Nacional Telematica and Grupo ABC, a Brazilian corporation that includes telecom engineering and manufacturing interests. At the meeting, representatives from the operating companies throughout Brazil, along with domestic telecom equipment manufacturers, discussed the increasing need for coverage to isolated areas in Brazil, as well as for upgraded services in areas that now have minimal service.

By developed country standards, these requests are modest. They include better quality high frequency circuits, full-duplex service, the ability to dial direct to the state and national capital, reliable 24-hour service and, eventually, service equal to that of the urban cities.

The participants also summarized the problems facing rural telecommunications, some of which are the same for the urban areas. These problems include:

- higher demand and necessarily high prices;
- high equipment and maintenance costs;
- low administered tariffs that limit returns for investment;
- insufficient telecommunications support to develop rural agriculture;
- limited funds and trained personnel for technology implementation; and
- legal restrictions for non-governmental facilities development.

The results of the meeting culminated in a letter to the government re-emphasizing the importance of the rural agricultural activities to the Brazilian economy and the need for better telecommunications support to improve the efficiency of these activities. It also suggested several options to expedite this improvement. Among them were recommendations for various governmental

ministries to pool funding for telecom development, the development of pilot projects such as time division multiple access and cellular radio, and expansion of private enterprise, including cooperatives and associations.

Liberalization

This last recommendation, if implemented, would be a major departure for Brazil. Currently, all aspects of telecommunications are regulated by the government under a law established by the National Congress in 1962.

The law provides the basic framework for governmental control of telephone, telegraph, telex, and data and satellite communications, though radio and TV are now private. The law established a Ministry of Communications and authorized a National Telecommunications Fund surcharge on all services, as well as subsequent governmental organizations.

Definitive operational and administrative control was established in 1965 with the formation of Embratel, the state-owned long-distance carrier. In 1972, the government formed Telebras, a federal holding company that controls 30 regional telcos and provides 95% of local phone service.

Telecom policies were reasonably successful under the military presidents between 1964 and 1985, largely due to the priority given to investment in the industry. The start-up of Telebras in 1972, whose mission was to update and develop public telecommunications, accelerated these successes without any government money. Financing for expansion was achieved through the tariff-rate structure and the FNT "self-financing contribution." In fact, the state-owned telecom companies were among the few profitable and efficient public sector concerns in Brazil.

The oil crisis of the mid-1970s and increasing foreign debt changed the Brazilian economy and the potential for internally financed telecommunications growth. The growing public-sector deficit and high interest on foreign debt forced the national treasury to use the telecom sector as a source of funding by levying special taxes and appropriating the

Telebras surplus. This situation continues today.

The government is giving serious consideration to some form of privatization as a partial solution. Some decisions—at least in selected areas such as cellular radio—are expected this fall.

The Congress, the ministries and the constituents are divided on the practicality of expanding private enterprise for Brazilian telecommunications. One position is that private monopoly should take the place of state ownership; competition is unacceptable.

A second perspective is that it would be difficult to give private industry the approximately \$20 billion in assets now owned by Telebras. Private enterprise has neither the money nor confidence to invest in a industry where service charges are not allowed to keep pace with inflation. The solution, therefore, would be a hybrid model in which Telebras would continue basic service operations, high-capacity regional microwave routes and international traffic while private companies would take over other services such as cellular, data communications and other enhanced services such as videotex and television.

Two other views also are prevalent. The first would see Telebras' operating companies shift toward private enterprise methods to accommodate future liberalization. The second would merely overhaul the companies' management.

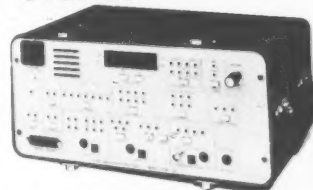
Given these extreme points of view and the severity of the problems related to other significant economic and political issues, it may be premature to expect the current congress to make strides toward liberalization or privatization. The congress is more likely to maintain the current structure that gives the federal government the major decision role.

A decree was signed by President Sarney this month to consider letting private companies provide mobile phone services such as cellular radio in Brazil. It remains to be seen, however, to what extent such implementation will be realized. Substantial moves toward private enterprise are likely to take several more years. ■

Norman C. Lerner is President of Transcomm Inc., Falls Church, Va.

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